

**State of Texas**  
**Public Drinking Water Program**  
**2022 Annual Compliance Report**



Tower of the Americas, San Antonio, TX

**Texas Commission on Environmental Quality (TCEQ)**  
**Office of Water**  
**Water Supply Division**

July 01, 2023

# Table of Contents

<b>Introduction</b>	<b>1</b>
<b>Definitions &amp; Terms</b>	<b>2</b>
<b>Public Water Systems in Texas</b>	<b>3</b>
Drinking Water Sources	4
Public Water System Size	7
Alternative Water Sources	8
<b>2022 Compliance Results</b>	<b>9</b>
Health-Based Standards	9
Significant Monitoring and Reporting Regulations	12
Violations by Rule and Type	14
Synthetic Organic Contaminants	19
Volatile Organic Contaminants	20
Inorganic Contaminants	21
Radionuclides	22
Revised Total Coliform Rule	23
Surface Water Treatment Rules	23
Disinfectants and Disinfection By-Products Rule (DBP1 & DBP2)	24
Lead and Copper Rule	25
Groundwater Rule	26
Consumer Confidence Reports	26
Public Notification Rule	26
<b>Appendix A. Return To Compliance By Rule</b>	<b>27</b>
<b>Obtaining a Copy of the 2022 Public Drinking Water Annual Compliance Report</b>	<b>30</b>

# Introduction

The Texas Commission on Environmental Quality (TCEQ) administers the Public Drinking Water Program in Texas under primacy authority from the United States Environmental Protection Agency (EPA). Section 1414(c)(3) of the Safe Drinking Water Act (SDWA) requires that each state that has been granted primacy prepare an annual report on violations of national primary drinking water regulations within the state, make the report readily available to the public, and submit it to the EPA. TCEQ 2022 Annual Compliance Report fulfills this responsibility for Texas, and includes health-based, reporting, and consumer notification violations.

Each quarter, primacy States submit data to the Federal Safe Drinking Water Information System (SDWIS/FED), an automated database maintained by EPA. This report is based on data retrieved from the Texas installation of SDWIS/STATE. This report contains data from the following time periods:

1. The beginning date of a given violation compliance period on or before December 31, 2022.
2. The ending date of a given violation compliance period on or after January 1, 2022.

By using these criteria, some violations which began prior to calendar year 2022 are included in this report.

# Definitions and Terms

The following are definitions and terms used in this report.

**Public Water System** - A Public Water System (PWS), as defined by the State of Texas, is a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves at least 25 people for at least 60 days each year. There are three types of PWSs:

- Community PWSs such as towns or other communities where people live.
- Non-Transient Non-Community PWSs such as schools or factories where people work but do not live.
- Transient Non-Community systems such as rest stops, parks, and restaurants where people frequently come and go.

For this report, the acronym PWS means systems of all types unless specified in greater detail.

**Maximum Contaminant Level** - Under the Safe Drinking Water Act (SDWA), the EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs).

**Maximum Residual Disinfectant Level** - The EPA sets national limits on residual disinfection levels in drinking water to reduce the risk of exposure to disinfectant byproducts formed when PWSs add chemical disinfection for either primary or residual treatment. These limits are known as Maximum Residual Disinfectant Levels (MRDLs).

**Treatment Techniques** - A treatment technique (TT) is an enforceable procedure or level of technological performance which PWSs must follow to ensure control of a contaminant.

**Variations and Exemptions** - A variance is the use of less costly technology and an exemption provides additional time to comply with new regulation. The State of Texas does not grant variances or exemptions.

**Monitoring** - A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. If a PWS fails to have its water tested as required or fails to report test results correctly to the primacy agent, a monitoring/reporting violation (M/R) occurs.

**Sampling** - The TCEQ collects chemical compliance samples for PWSs using a third-party contractor. The samples collected include inorganic and organic chemicals, disinfection by-products and radionuclides. These samples are collected either at the entry point or in the distribution system. Using a third party to collect samples ensures greater quality assurance, unbiased sample results and a very high collection rate. In 2022, 99.9% of samples scheduled were collected, or the sample sites were accounted for as inactive or unavailable for sampling. The PWSs comply with the chemical compliance sampling requirement by paying the lab analysis expense.

PWSs are required to collect additional compliance samples. All public water systems are responsible for the routine collection of bacteriological samples and disinfection residual data

from their distribution system. Most water systems have to perform sampling for compliance for the Lead and Copper Rule. Systems that use a groundwater source must monitor their raw well water when applicable. Systems that use surface water or groundwater under the influence of surface water must monitor routinely for turbidity and are also required to perform source water monitoring for *Cryptosporidium*. Also, systems that use specific treatments (such as chlorine dioxide or ozone) in their drinking water production are required to perform specialized monitoring.

**Significant Monitoring Violations** - For this report, significant monitoring violations are defined as any significant monitoring violation that occurred during the calendar year of the report. A significant monitoring violation occurs when no health-based sample result is reported during a compliance period, or more rarely, when no sample is collected.

**Consumer Notification** - Every Community water system is required to deliver to its customers a brief annual water quality report, referred to as the Consumer Confidence Report (CCR). This report shall include educational material, information on the source of the water, the levels of any detected contaminants, and compliance with drinking water regulations.

**Significant Consumer Notification Violations** - For this report, a significant public notification violation occurred if a community water system completely failed to provide its customers the required annual water quality report. This type of violation is designated as “CCR Failure to Report” in SDWIS/STATE.

**Public Notification** - Public Notification is intended to ensure that consumers will always know if there is a problem with their drinking water. These notices immediately alert consumers if there is a serious problem with their drinking water that may pose a risk to public health. They also notify customers if their water does not meet drinking water standards, the water system fails to test its water, or if the system has been granted a variance (use of less costly technology) or an exemption (more time to comply with a new regulation).

**Return to Compliance** - A violation is Returned to Compliance (RTC) when the PWS has met all requirements to remedy the violation as determined by Federal and State Drinking Water regulations.

## Public Water Systems in Texas

As of July 01, 2023, the State of Texas regulates approximately 7,122 PWSs, providing drinking water to 30,601,843 customers.

- Approximately 29,804,038 people receive drinking water from 4,656 Community water systems.
- Approximately 490,193 people receive drinking water from 888 Non-Transient Non-Community water systems.
- Approximately 307,612 people receive drinking water from 1,578 Transient Non-Community water systems.

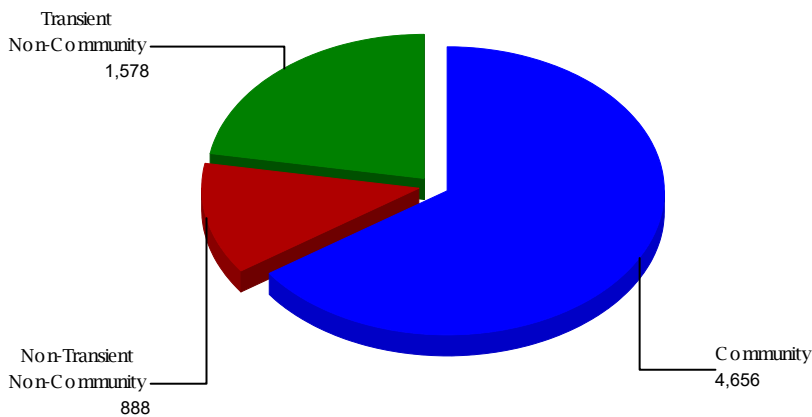
State regulations require all PWSs in Texas to disinfect their drinking water. All systems must properly disinfect water before it is distributed to any customer and must maintain acceptable disinfectant residuals within their distribution system. Systems are required to maintain a disinfectant residual concentration of at least 0.2 milligrams per liter (mg/L) of free chlorine or 0.5 mg/L of chloramine (chlorine + ammonia) in the water entering their distribution system as well as throughout the distribution system.

All PWSs that use surface water or groundwater under the influence of surface water as a drinking water source, must use filtration as a treatment in their potable water production. Filtration is used along with other treatments as applicable.

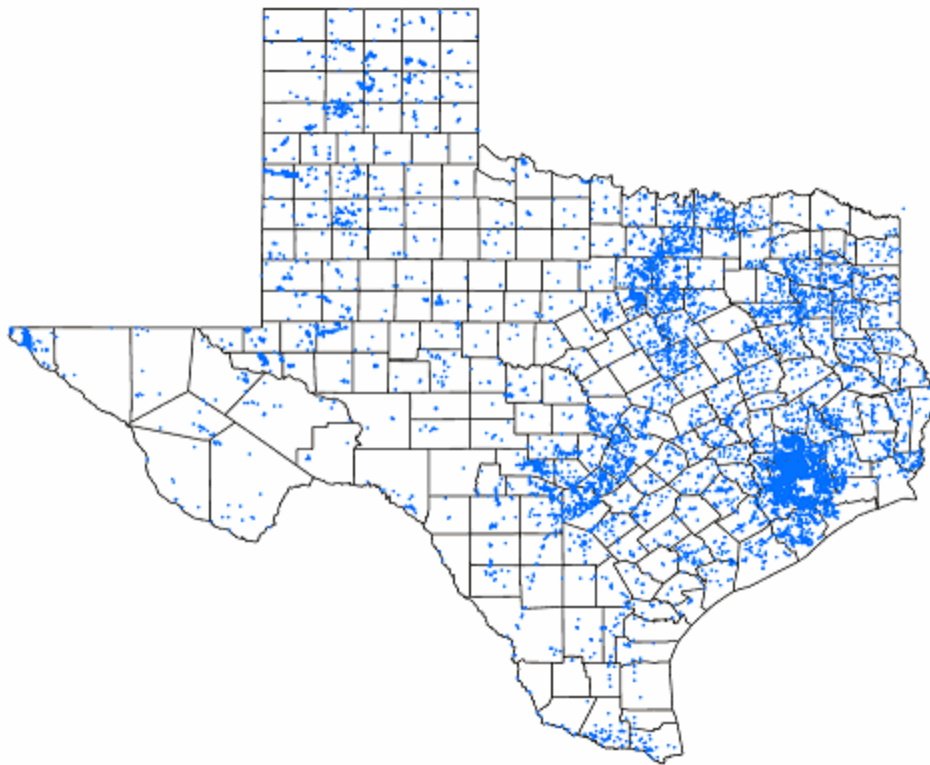
## Drinking Water Sources

Sources for drinking water within Texas include both groundwater and surface water originating from numerous aquifers, rivers, and reservoirs throughout the state. An illustration of public drinking water systems in Texas by PWS type is shown below in Figure 1.

**Figure 1. Public Water Systems in Texas by Type**



**Figure 2. Distribution of Public Water System Sources Across Texas**



**Table 1. Public Water System Sources in Texas by Type**

Source Type	Sources
Groundwater*	13,861
Surface Water	473

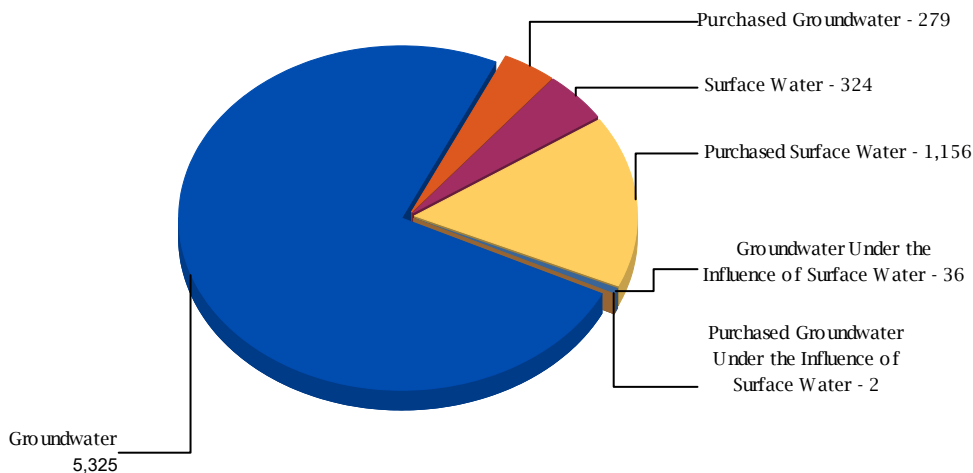
*\*Groundwater Under the Influence of Surface Water (GUI) sources are included as groundwater sources.*

Primary source types for PWSs in Texas include the following

- **Groundwater** - wells that withdraw water from aquifers
- **Purchased Groundwater** - water purchased from another PWS where the source is one or more wells
- **Surface water** - intakes that withdraw water from creeks, rivers, streams, lakes, and reservoirs
- **Purchased surface water** - water is purchased from another PWS where the source is one or more intakes
- **Groundwater Under the Influence of Surface Water** - wells that withdraw water from one or more aquifers where surface water may be present
- **Purchased Groundwater Under the Influence of Surface Water** - water is purchased from another PWS where the source is one or more aquifers where surface water may be present

The number of Public Water Systems by primary source type are included in Figure 3.

**Figure 3. Number of Public Water Systems in Texas by Source Type**





## Public Water System Size

The EPA defines water system size based on the following population classifications:

- Very small systems - serve 25 to 500 people
- Small systems - serve 501 to 3,300 people
- Medium systems - serve 3,301 to 10,000 people
- Large systems - serve 10,001 to 100,000 people
- Very Large systems - serve more than 100,000 people

**Table 2. Texas Public Water System Population by EPA Classification**

Population	EPA Classification	Number of PWSs	Total Population Served
25 - 500	Very Small	4,217	675,800
501 - 3,300	Small	1,775	2,573,242
3,301 - 10,000	Medium	744	4,215,696
10,001 - 100,000	Large	343	8,742,067
Over 100,000	Very Large	43	14,395,038
	Total	7,122	30,601,843

## Alternative Water Sources

With Texas' population expected to reach almost 46 million by the year 2060 as well as the lasting effects of the droughts, Texans have had to plan far in advance to sustain their communities, businesses, industries, and environment. Because of these challenges, PWSs have had to begin to utilize less conventional sources of water.

**Desalination:** In the search to find an alternate water source desalination continues to gain attention as some communities seek to treat saline groundwater, or brackish water, to make it potable. Brackish water sources often need treatment to be used as drinking water, and desalination is the most typical treatment utilized by water systems. For this reason, the agency initiated rulemaking to streamline construction approval for PWSs asking to conduct brackish-groundwater desalination.

In July 2015, after extensive input from the regulated community and interested stakeholders, the rules for desalination using either reverse osmosis (RO) or nanofiltration (NF) membranes became effective. In the past, the use of RO membranes or other desalination techniques required either a site-specific pilot test, a pilot test at a site with similar water quality, or full-scale performance data at a site with similar water quality. The streamlined approach in the rules allow the use of desalination technologies without an exception request, which is required when approving the use of innovative and alternative treatment technologies. To further assist communities with decreased water supplies, the TCEQ offers concurrent reviews of designs and computer models.

**Reuse/reclaimed water:** As water systems search for new sources of water, some PWSs began to explore strategies not previously considered. One alternative involves not just reclaiming effluent from municipal wastewater treatment plants for non-potable uses such as irrigation and industry, but also additional treatment to remove chemical and microbiological contaminants found in effluent for potable use. The TCEQ has engineers and scientists with the expertise to guide PWSs through the process of selecting innovative treatment technologies and receiving approval for these technologies while ensuring the treated water is safe for human consumption. Texas is the first state to have Direct Potable Reuse (DPR). TCEQ prepared and released regulatory guidance Direct Potable Reuse for Public Water Systems (RG-634) to address the review/approval process for DPR projects in November of 2022. The guidance is available at <https://www.tceq.texas.gov/downloads/drinking-water/rg-634.pdf>.

## 2022 Compliance Results

Annual compliance information was determined using the State of Texas Safe Drinking Water Information System (SDWIS) State, version 3.4.

### Health-Based Standards

In 1974 Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime, with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water. EPA sets MCLGs based on the best available science to prevent potential health problems.

For most contaminants, EPA sets an enforceable regulation called a maximum contaminant level (MCL) based on the MCLG. MCLs are set as close to the MCLGs as possible, considering cost, benefits and the ability of PWSs to detect and remove contaminants using suitable treatment technologies. When there is no reliable method that is economically and technically feasible to measure a contaminant at particularly low concentrations, a treatment technique is set rather than an MCL. A treatment technique is an enforceable procedure or level of technological performance which PWSs must follow to ensure control of a contaminant. States may set a more stringent MCL or treatment technique level for pathogens and indicators in drinking water than EPA.

Health-based contaminants are those that may pose an acute or long-term risk to human health if they are found in drinking water. These contaminants include: fecal coliform bacteria, *E. coli*, turbidity, nitrate, nitrite, chlorine dioxide, inorganic chemicals, organic chemicals, disinfection byproducts, radionuclides and disinfectants.

Total coliforms and turbidity are indicators that inadequately treated water may contain disease-causing organisms. Pathogens include various types of bacteria, viruses, protozoan parasites and other organisms. Indicators are physical, chemical, or other parameters whose presence at a level outside of specified limits may reflect a problem in the treatment process or in the integrity of the distribution system. These pathogens can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

Nitrate and nitrite contamination can occur from several sources: the natural decay of organic materials such as leaves and crop residue, use of commercial fertilizers, contamination by human sewage and wastes from farm animals, and the nitrification of ammonia in the treatment and distribution system. Excessive levels of nitrate and nitrite in drinking water can cause serious illness and sometimes death in infants less than six months of age and may also cause adverse health effects in pregnant women through the risk of miscarriage and in people with specific metabolic diseases.

Chlorine dioxide is a chemical added to drinking water for the purposes of microbial disinfection and oxidation of dissolved organic carbon to reduce formation of disinfection

byproducts. Some infants, young children and pregnant women who drink water containing chlorine dioxide in excess of the Maximum Residual Disinfectant Level (MRDL) could experience nervous system effects or anemia.

Inorganic contaminants can leach into drinking water after dissolving from naturally-occurring minerals in the ground, or from runoff from industrial sources or landfills. Lead and copper enter drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach problems to brain damage. Lead and copper levels are controlled by treatment techniques and regulated by action levels.

Organic contaminants come from petroleum solvents, paint removers, degreasers, cleaning fluids, pesticides, gasoline, electrical transformers, manufacturing processes, chemical production, byproducts from disinfection, the production of plastics, agricultural runoff, improper waste disposal, and improper handling and storage techniques. These contaminants may damage organs such as the heart, liver, and kidneys, damage the central nervous and immune systems, and cause cancer.

Disinfection byproducts are organic chemicals that form as a result of adding disinfectant to water containing organic matter. Trihalomethanes, haloacetic acids, chlorite and bromate are byproducts of disinfection. These contaminants may damage organs such as the kidneys and liver, damage the cardiovascular system and central nervous system, and may cause an increased risk of cancer.

Radionuclides include radium and uranium, which occur naturally in some groundwater due to geological formations, particularly in deeper aquifers. Radionuclide contaminants may cause cancer.

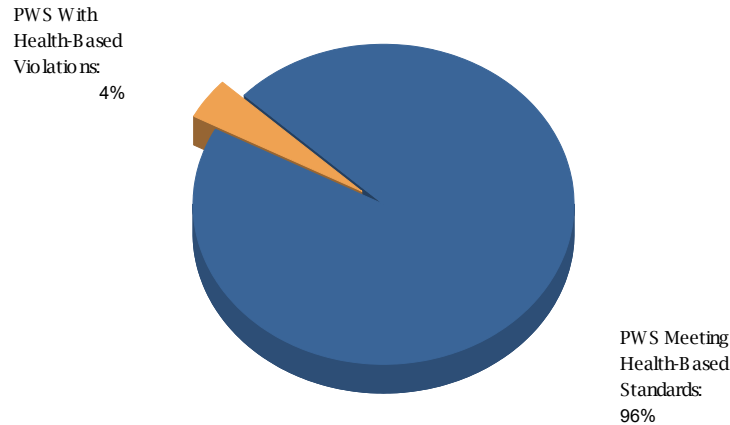
Disinfectants are chemicals added to drinking water during treatment to provide disinfection at the treatment plant and in the distribution system. If disinfectants are not dosed and managed appropriately, they may cause health effects from chlorine and chloramines which can include irritating effects to the eyes and nose, stomach discomfort, and (chloramine only) anemia. Chlorine dioxide can cause nervous system effects and anemia.

To find more information regarding drinking water contaminants regulated by the EPA, and their potential health effects, go to the following website:  
<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

## Health-Based Standards Results

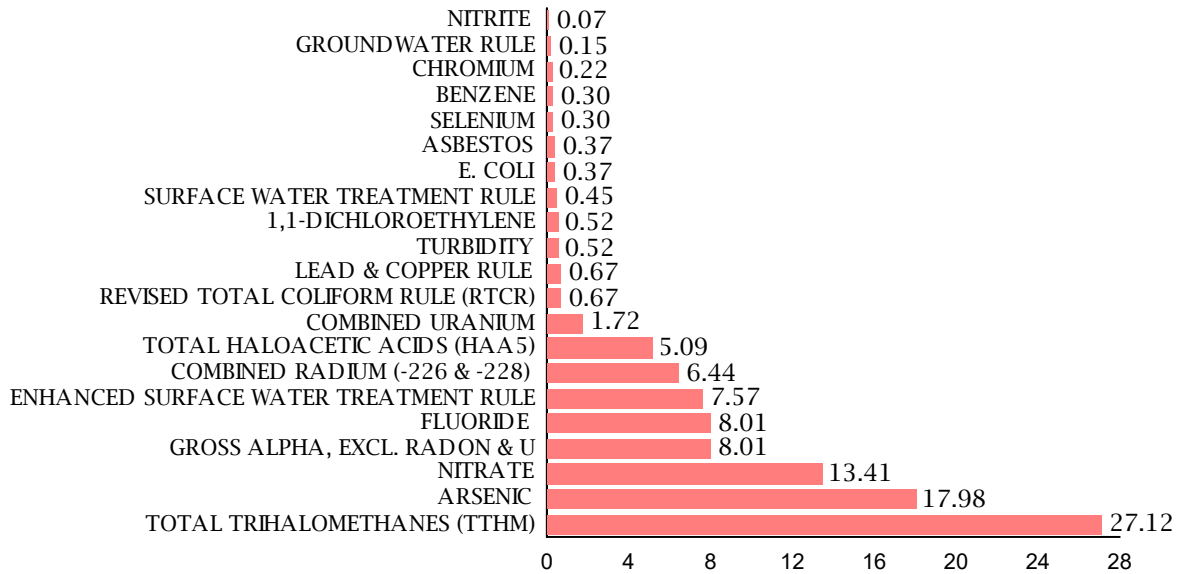
For 2022, health-based standards were met by 96% of the 7,122 PWSs in the State of Texas. The percentage of total population served by PWSs meeting health-based standards was 99%. Figure 3 below shows the percentage of PWSs in compliance with health-based standards.

**Figure 3. Percent of PWS in Compliance with Health-Based Standards**



Maximum Contaminant Level and Treatment Technique Rule violations, as a percentage total health-based violations, are shown in Figure 4 below.

**Figure 4. Percent of Health-Based Standards Violations, by Contaminant/Rule**

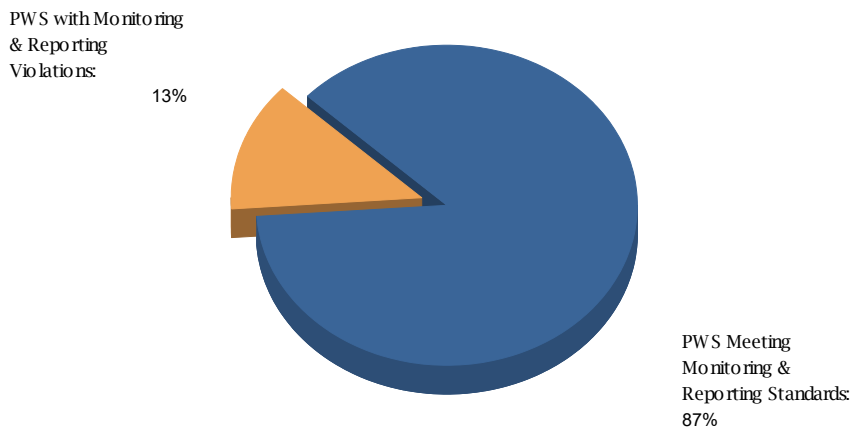


## Significant Monitoring and Reporting Regulations

Monitoring and Reporting regulations provide a mechanism to ensure that PWSs evaluate contaminants in order to meet health-based standards. When a system does not monitor for contaminants in accordance with associated compliance periods, consumers and primacy agencies do not know whether the water being served is meeting health-based standards.

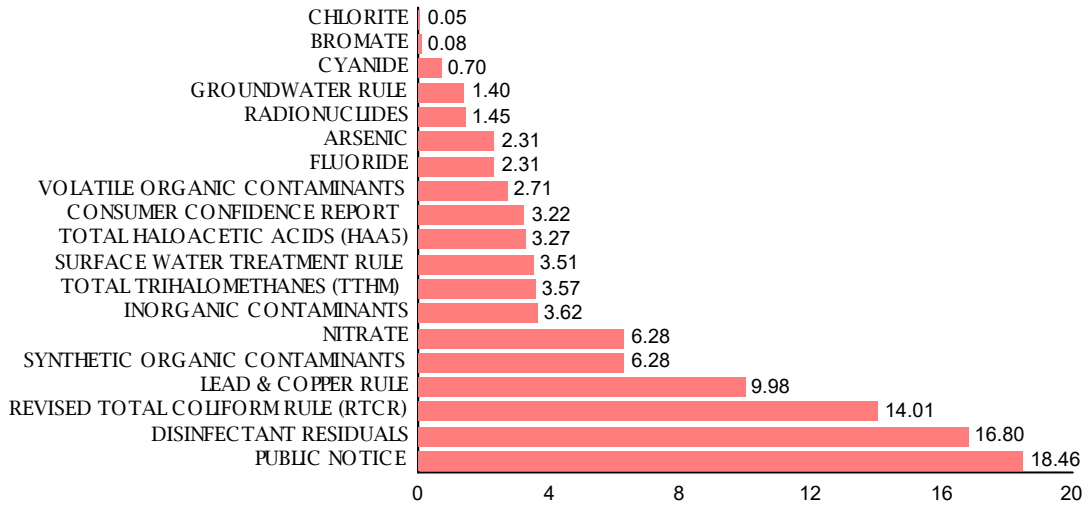
For 2022, 87% of the 7,122 PWSs in Texas were in compliance with major monitoring and reporting regulations. The total population served by PWSs meeting monitoring and reporting regulations is 95%.

**Figure 5. Percent of PWS in Compliance with Monitoring and Reporting Regulations**



Of the 13 percent of PWSs with monitoring and reporting violations, the percent by contaminant and rule are shown in Figure 6 below.

**Figure 6. Percent of Monitoring & Reporting Violations by Contaminant or Rule**



## Violations by Rule and Type

A summary of the number of violations by rule and type is shown below in Table 2. Violations included here are only those that did not return to compliance in 2022. See Appendix A for the total number of violations and those violations that returned to compliance.

**Table 3. PWS Violations by Rule and Type**

<b>Rule</b>	<b>Violation Type Code</b>	<b>Violation Name</b>	<b>Violations Not Returned to Compliance</b>	<b>Number of PWS in Violation</b>
CONSUMER CONFIDENCE RULE	71	CCR REPORT	120	80
DISINFECTION BY-PRODUCTS	35	FAILURE SUBMIT OEL REPORT FOR HAA5	3	3
DISINFECTION BY-PRODUCTS	35	FAILURE SUBMIT OEL REPORT FOR TTHM	14	8
DISINFECTION BY-PRODUCTS	02	MCL, LRAA	117	40
DISINFECTION BY-PRODUCTS	27	MONITORING, (DBP) (CHL. DIOXIDE)	1	1
DISINFECTION BY-PRODUCTS	27	MONITORING, ROUTINE (DBP), MAJOR	869	387
GROUNDWATER RULE	45	FAILURE ADDRESS DEFICIENCY (GWR)	2	2
GROUNDWATER RULE	34	MONITOR GWR TRIGGERED/ADDITIONAL, MAJOR	45	38



<b>Rule</b>	<b>Violation Type Code</b>	<b>Violation Name</b>	<b>Violations Not Returned to Compliance</b>	<b>Number of PWS in Violation</b>
GROUNDWATER RULE	34	MONITOR GWR TRIGGERED/ADDITIONAL, MINOR	7	5
INORGANIC COMPOUNDS GROUP M/R	03	MONITORING, ROUTINE MAJOR	111	65
INORGANIC COMPOUNDS INDIVIDUAL M/R	03	MONITORING, ROUTINE MAJOR	350	199
INORGANIC COMPOUNDS MCL	02	MCL, AVERAGE	359	78
INORGANIC COMPOUNDS MCL	01	MCL, SINGLE SAMPLE	180	63
LEAD AND COPPER RULE	52	FOLLOW-UP OR ROUTINE TAP M/R (LCR)	313	270
LEAD AND COPPER RULE	51	INITIAL TAP SAMPLING (LCR)	12	12
LEAD AND COPPER RULE	56	INITIAL/FOLLOW-UP/ROUTINE SOWT M/R (LCR)	12	11
LEAD AND COPPER RULE	66	LEAD CONSUMER NOTICE (LCR)	140	119
LEAD AND COPPER RULE	57	OCCT/SOWT RECOMMENDATION/STUDY (LCR)	9	8

<b>Rule</b>	<b>Violation Type Code</b>	<b>Violation Name</b>	<b>Violations Not Returned to Compliance</b>	<b>Number of PWS in Violation</b>
LEAD AND COPPER RULE	53	WATER QUALITY PARAMETER M/R (LCR)	109	91
PUBLIC NOTICE	75	PUBLIC NOTICE RULE LINKED TO VIOLATION	688	238
RADIONUCLIDES	02	MCL, AVERAGE	216	39
RADIONUCLIDES	03	MONITORING, ROUTINE MAJOR	54	28
REVISED TOTAL COLIFORM RULE	2C	CORRECTIVE/EXPEDITED ACTIONS (RTCR)	2	2
REVISED TOTAL COLIFORM RULE	2A	LEVEL 1 ASSESS, MULTIPLE TC POS (RTCR)	4	4
REVISED TOTAL COLIFORM RULE	2A	LEVEL 1 ASSESS, TC POS RT NO RPT (RTCR)	3	3
REVISED TOTAL COLIFORM RULE	1A	MCL, E. COLI, POS E COLI (RTCR)	5	5
REVISED TOTAL COLIFORM RULE	3A	MONITORING, ROUTINE, MAJOR (RTCR)	513	170
SURFACE WATER TREATMENT RULES	41	FAILURE MAINTAIN MICROBIAL TREAT. (LT2)	101	9

<b>Rule</b>	<b>Violation Type Code</b>	<b>Violation Name</b>	<b>Violations Not Returned to Compliance</b>	<b>Number of PWS in Violation</b>
SURFACE WATER TREATMENT RULES	42	FAILURE TO FILTER (SWTR)	1	1
SURFACE WATER TREATMENT RULES	CT	LOW CT GREATER THAN 4 HOURS	5	4
SURFACE WATER TREATMENT RULES	38	MONITORING, ROUTINE (IESWTR/LT1), MAJOR	124	16
SURFACE WATER TREATMENT RULES	44	MONTHLY COMB FLTR EFFLUENT (IESWTR/LT1)	3	2
SURFACE WATER TREATMENT RULES	43	SINGLE COMB FLTR EFFLUENT (IESWTR/LT1)	4	3
SYNTHETIC ORGANIC COMPOUNDS M/R	03	MONITORING, ROUTINE MAJOR	234	89
VOLATILE ORGANIC COMPOUNDS M/R	03	MONITORING, ROUTINE MAJOR	101	90
VOLATILE ORGANIC COMPOUNDS MCL	02	MCL, AVERAGE	11	3

**Rule Abbreviations:**

CCR	Consumer Confidence Report
CHEM	Chemical (Inorganics and Organics)
DBP	Disinfection Byproducts
GWR	Groundwater Rule
HAA5	Haloacetic Acids
IESWTR	Interim Enhanced Surface Water Treatment Rule
LCR	Lead and Copper Rule
LT1	Long Term 1 Enhanced Surface Water Treatment Rule
LT2	Long Term 2 Enhanced Surface Water Treatment Rule
PN	Public Notice Rule
RAD	Radionuclides
SWTR	Surface Water Treatment Rule
RTCR	Revised Total Coliform Rule
TTHM	Total Trihalomethanes

**MCL/MRDL, Treatment Technique, and Monitoring/Reporting Violations**

The following pages include summary tables for MCL/MRDL, Treatment Techniques, and Monitoring/Reporting. Violations included in these tables are only those that did not return to compliance in 2022.

Units of Measure used on the following pages:

MG/L	Milligrams per Liter
MFL	Million Fibers per Liter
pCi/L	Picocuries per Liter

### Synthetic Organic Compounds

Contaminant	MCL/MRDL	MCL/ MRDL Violations	MCL/ MRDL PWS in Violation	M/R Violations	M/R PWS in Violation
1,2-DIBROMO-3-CHLOROPROPANE	0.0002MG/L	0	0	62	61
ETHYLENE DIBROMIDE	0.00005MG/L	0	0	62	61
2,4,5-TP	0.05MG/L	0	0	68	66
2,4-D	0.07MG/L	0	0	68	66
DALAPON	0.2MG/L	0	0	68	66
DINOSEB	0.007MG/L	0	0	68	66
PICLORAM	0.5MG/L	0	0	68	66
ALDICARB	0.003MG/L	0	0	67	65
ALDICARB SULFONE	0.002MG/L	0	0	67	65
ALDICARB SULFOXIDE	0.004MG/L	0	0	67	65
CARBOFURAN	0.04MG/L	0	0	67	65
OXAMYL	0.2MG/L	0	0	67	65
ALACHLOR	0.002MG/L	0	0	37	32
ATRAZINE	0.003MG/L	0	0	37	32
BENZO(A)PYRENE	0.0002MG/L	0	0	37	32
BHC-GAMMA	0.0002MG/L	0	0	37	32
CHLORDANE	0.002MG/L	0	0	37	32
DI(2-ETHYLHEXYL) ADIPATE	0.4MG/L	0	0	37	32
DI(2-ETHYLHEXYL) PHTHALATE	0.006MG/L	0	0	37	32
ENDRIN	0.002MG/L	0	0	37	32
HEPTACHLOR	0.0004MG/L	0	0	37	32
HEPTACHLOR EPOXIDE	0.0002MG/L	0	0	37	32
HEXACHLOROBENZENE	0.001MG/L	0	0	37	32
HEXACHLOROCYCLOPENTADIENE	0.05MG/L	0	0	37	32
METHOXYCHLOR	0.04MG/L	0	0	37	32
PENTACHLOROPHENOL	0.001MG/L	0	0	37	32
SIMAZINE	0.004MG/L	0	0	37	32
TOXAPHENE	0.003MG/L	0	0	37	32
<b>Subtotal</b>		<b>0</b>	<b>0</b>	<b>234</b>	<b>89</b>

### *Volatile Organic Compounds*

Contaminant	MCL/MRDI	MCL/ MRDL Violations	MCL/ MRDL PWS in Violation	M/R Violations	M/R PWS in Violation
1,1,1-TRICHLOROETHANE	0.2MG/L	0	0	101	90
1,1,2-TRICHLOROETHANE	0.005MG/L	0	0	101	90
1,1-DICHLOROETHYLENE	0.007MG/L	7	2	101	90
1,2,4-TRICHLOROBENZENE	0.07MG/L	0	0	101	90
1,2-DICHLOROETHANE	0.005MG/L	0	0	101	90
1,2-DICHLOROPROPANE	0.005MG/L	0	0	101	90
BENZENE	0.005MG/L	4	1	101	90
CARBON TETRACHLORIDE	0.005MG/L	0	0	101	90
CIS-1,2-DICHLOROETHYLENE	0.07MG/L	0	0	101	90
DICHLOROMETHANE	0.005MG/L	0	0	101	90
ETHYLBENZENE	0.7MG/L	0	0	101	90
O-DICHLOROBENZENE	0.6MG/L	0	0	101	90
STYRENE	0.1MG/L	0	0	101	90
TETRACHLOROETHYLENE	0.005MG/L	0	0	101	90
TOLUENE	1MG/L	0	0	101	90
TRANS-1,2-DICHLOROETHYLENE	0.1MG/L	0	0	101	90
TRICHLOROETHYLENE	0.005MG/L	0	0	101	90
VINYL CHLORIDE	0.002MG/L	0	0	101	90
XYLENES, TOTAL	10MG/L	0	0	101	90
<b>Subtotal</b>		<b>11</b>	<b>3</b>	<b>101</b>	<b>90</b>

***Inorganic Compounds -- Individual Violations***

<b>Contaminant</b>	<b>MCL/MRDI</b>	<b>MCL/ MRDL Violations</b>	<b>MCL/ MRDL PWS in Violation</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
ALUMINUM	0.2MG/L	0	0	0	0
ANTIMONY, TOTAL	0.006MG/L	0	0	0	0
ARSENIC	0.01MG/L	240	64	33	12
ASBESTOS	7MFL	0	0	0	0
BARIUM	2MG/L	0	0	0	0
BERYLLIUM, TOTAL	0.004MG/L	0	0	0	0
CADMIUM	0.005MG/L	0	0	0	0
CHROMIUM	0.1MG/L	0	0	0	0
CYANIDE	0.2MG/L	0	0	26	26
FLUORIDE	4MG/L	107	26	28	6
MERCURY	0.002MG/L	0	0	0	0
NITRATE	10MG/L	179	62	234	191
NITRITE	1MG/L	1	1	25	15
SELENIUM	0.05MG/L	4	1	4	1
SILVER	0.1MG/L	0	0	0	0
THALLIUM, TOTAL	0.002MG/L	0	0	0	0
ZINC	5MG/L	0	0	0	0
<b>Subtotal</b>		<b>531</b>	<b>135</b>	<b>350</b>	<b>199</b>

### *Inorganic Compounds -- Group Violations*

Contaminant	M/R Violations	M/R PWS in Violation
<b>Metals</b>		
ALUMINUM	53	51
ANTIMONY, TOTAL	53	51
ARSENIC	53	51
BARIUM	53	51
BERYLLIUM, TOTAL	53	51
CADMIUM	53	51
CHROMIUM	53	51
IRON	53	51
MANGANESE	53	51
MERCURY	53	51
SELENIUM	53	51
SILVER	53	51
THALLIUM, TOTAL	53	51
ZINC	53	51
<b>Minerals</b>		
CHLORIDE	58	57
FLUORIDE	58	57
SULFATE	58	57
TDS	58	57
<b>Subtotal</b>	<b>111</b>	<b>65</b>

### *Radionuclides*

Contaminant	MCL/MRDI	MCL/ MRDL Violations	MCL/ MRDL PWS in Violation	M/R Violations	M/R PWS in Violation
COMBINED RADIUM (-226 & -228)	15pCi/L	86	22	54	28
COMBINED URANIUM	30ug/L	23	6	54	28
GROSS ALPHA, EXCL. RADON & U	5pCi/L	107	32	54	28
<b>Subtotal</b>		<b>216</b>	<b>39</b>	<b>54</b>	<b>28</b>



***Revised Total Coliform Rule***

<b>Violation Type</b>	<b>MCL/MRDL</b>	<b>MCL/ MRDL Violations</b>	<b>MCL/ MRDL PWS in Violation</b>	<b>Treatment Technique Violations</b>	<b>Treatment Technique PWS in Violation</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
MCL, E. COLI, POS E COLI (RTCR)	PRESENCE	5	5				
MONITORING, ROUTINE, MAJOR (RTCR)	N/A					513	170
LEVEL 1 ASSESS, TC POS RT NO RPT (RTCR)	N/A			3	3		
CORRECTIVE/EXPEDITED ACTIONS (RTCR)	N/A			2	2		
LEVEL 1 ASSESS, MULTIPLE TC POS (RTCR)	N/A			4	4		
<b>Subtotal</b>		<b>5</b>	<b>5</b>	<b>9</b>	<b>9</b>	<b>513</b>	<b>170</b>

***Surface Water Treatment Rules***

<b>Violation Type</b>	<b>Treatment Technique Violations</b>	<b>Treatment Technique PWS in Violation</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
LOW CT GREATER THAN 4 HOURS	5	4	0	0
MONTHLY COMB FLTR EFFLUENT (IESWTR/LT1)	3	2	0	0
MONITORING, ROUTINE (IESWTR/LT1), MAJOR	0	0	124	16
SINGLE COMB FLTR EFFLUENT (IESWTR/LT1)	4	3	0	0
FAILURE TO FILTER (SWTR)	1	1	0	0
FAILURE MAINTAIN MICROBIAL TREAT.(LT2)	101	9	0	0
<b>Subtotal</b>	<b>114</b>	<b>16</b>	<b>124</b>	<b>16</b>

***Disinfectants and Disinfection By-Products Rule (DBP1 & DBP2)***

<b>Contaminant</b>	<b>MCL/MRDI</b>	<b>MCL/ MRDL Violations</b>	<b>MCL/ MRDL PWS in Violation</b>	<b>Treatment Technique Violations</b>	<b>Treatment Technique PWS in Violation</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
BROMATE	0.010MG/L	0	0	0	0	3	2
CARBON, TOTAL	REMOVAL RATIO	0	0	0	0	68	10
DISINFECTANT RESIDUAL	CHLORINE (FREE) 0.2MG/L, CHLORAMINE 0.5MG/L	0	0	0	0	558	308
CHLORINE DIOXIDE	0.8MG/L	0	0	0	0	1	1
CHLORITE	1.0MG/L	0	0	0	0	2	2
TOTAL HALOACETIC ACIDS (HAA5)	0.060MG/L	16	5	0	0	122	109
TRIHALOMETHANES (TTHM)	0.080MG/L	101	39	0	0	133	114
<b>Subtotal</b>		<b>117</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>887</b>	<b>393</b>

### ***Lead and Copper Rule***

<b>Violation Type</b>	<b>Treatment Technique Violations</b>	<b>Treatment Technique PWS in Violation</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
FOLLOW-UP OR ROUTINE TAP M/R (LCR)	0	0	313	270
INITIAL TAP SAMPLING (LCR)	0	0	12	12
INITIAL/FOLLOW-UP/ROUTINE SOWT M/R (LCR)	0	0	12	11
LEAD CONSUMER NOTICE (LCR)	0	0	140	119
LEAD SERVICE LINE REPLACEMENT (LCR)	0	0	0	0
MPL LEVEL NON-COMPLIANCE (LCR)	0	0	0	0
OCCT/SOWT INSTALL DEMONSTRATION (LCR)	0	0	0	0
OCCT/SOWT RECOMMENDATION/STUDY (LCR)	9	8	0	0
PUBLIC EDUCATION (LCR)	0	0	0	0
WATER QUALITY PARAMETER M/R (LCR)	0	0	109	91
WQP LEVEL NON-COMPLIANCE (LCR)	0	0	0	0
<b>Subtotal</b>	<b>9</b>	<b>8</b>	<b>586</b>	<b>451</b>

***Groundwater Rule***

<b>Violation Type</b>	<b>Treatment Technique Violations</b>	<b>Treatment Technique PWS in Violation</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
FAILURE ADDRESS DEFICIENCY (GWR)	2	2		
MONITOR GWR TRIGGERED/ADDITIONAL, MAJOR			45	38
MONITOR GWR TRIGGERED/ADDITIONAL, MINOR			7	5
<b>Subtotal</b>	<b>2</b>	<b>2</b>	<b>52</b>	<b>41</b>

***Consumer Confidence Reports***

<b>Violation Type</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
CONSUMER CONFIDENCE RULE	120	80
<b>Subtotal</b>	<b>120</b>	<b>80</b>

***Public Notification Rule***

<b>Violation Type</b>	<b>M/R Violations</b>	<b>M/R PWS in Violation</b>
PUBLIC NOTICE RULE	688	238
<b>Subtotal</b>	<b>688</b>	<b>238</b>

## Appendix A. Return to Compliance by Rule

Data included in Table 3 represent all violations starting prior to the end of 2022 and ending after the beginning of 2022. Violations that returned to compliance in Table 3 are those violations starting prior to the end of 2022 and ending after the beginning of 2022 and returning to compliance in 2022.

Rule	Violation Type Code	Violation Name	Open Violations	Resolved Violations
CONSUMER CONFIDENCE RULE	71	CCR REPORT	120	63
DISINFECTION BY-PRODUCTS	35	FAILURE SUBMIT OEL REPORT FOR HAA5	3	9
DISINFECTION BY-PRODUCTS	35	FAILURE SUBMIT OEL REPORT FOR TTHM	14	59
DISINFECTION BY-PRODUCTS	02	MCL, LRAA	117	21
DISINFECTION BY-PRODUCTS	27	MONITORING, (DBP) (CHL. DIOXIDE)	1	3
DISINFECTION BY-PRODUCTS	27	MONITORING, ROUTINE (DBP), MAJOR	869	386
DISINFECTION BY-PRODUCTS	13	MRDL, ACUTE (CHL.DIOXIDE)	0	1
GROUNDWATER RULE	45	FAILURE ADDRESS DEFICIENCY (GWR)	2	9
GROUNDWATER RULE	34	MONITOR GWR TRIGGERED/ADDITIONAL,	45	146
GROUNDWATER RULE	34	MONITOR GWR TRIGGERED/ADDITIONAL,	7	33
INORGANIC COMPOUNDS GROUP M/R	03	MONITORING, ROUTINE MAJOR	111	0
INORGANIC COMPOUNDS INDIVIDUAL M/R	03	MONITORING, ROUTINE MAJOR	350	36
INORGANIC COMPOUNDS MCL	02	MCL, AVERAGE	359	8
INORGANIC COMPOUNDS MCL	01	MCL, SINGLE SAMPLE	180	8
LEAD AND COPPER RULE	52	FOLLOW-UP OR ROUTINE TAP M/R (LCR)	313	71

<b>Rule</b>	<b>Violation Type Code</b>	<b>Violation Name</b>	<b>Open Violations</b>	<b>Resolved Violations</b>
LEAD AND COPPER RULE	51	INITIAL TAP SAMPLING (LCR)	12	0
LEAD AND COPPER RULE	56	INITIAL/FOLLOW-UP/ROUTINE SOWT M/R (LCR)	12	3
LEAD AND COPPER RULE	66	LEAD CONSUMER NOTICE (LCR)	140	314
LEAD AND COPPER RULE	58	OCCT/SOWT INSTALL DEMONSTRATION (LCR)	0	7
LEAD AND COPPER RULE	57	OCCT/SOWT RECOMMENDATION/STUDY	9	26
LEAD AND COPPER RULE	65	PUBLIC EDUCATION (LCR)	0	2
LEAD AND COPPER RULE	53	WATER QUALITY PARAMETER M/R (LCR)	109	12
PUBLIC NOTICE	75	PUBLIC NOTICE RULE LINKED TO VIOLATION	688	2,572
RADIONUCLIDES	02	MCL, AVERAGE	216	2
RADIONUCLIDES	03	MONITORING, ROUTINE MAJOR	54	1
REVISED TOTAL COLIFORM RULE	2C	CORRECTIVE/EXPEDITED ACTIONS (RTCR)	2	3
REVISED TOTAL COLIFORM RULE	2A	LEVEL 1 ASSESS, MULTIPLE TC POS (RTCR)	4	9
REVISED TOTAL COLIFORM RULE	2A	LEVEL 1 ASSESS, TC POS RT NO RPT (RTCR)	3	9
REVISED TOTAL COLIFORM RULE	2B	LEVEL 2 ASSESSMENT, 2ND LEVEL 1(RTCR)	0	1
REVISED TOTAL COLIFORM RULE	2B	LEVEL 2 ASSESSMENT, MCL TRIGGERED (RTCR)	0	1
REVISED TOTAL COLIFORM RULE	1A	MCL, E. COLI, POS E COLI (RTCR)	5	3
REVISED TOTAL COLIFORM RULE	3A	MONITORING, ROUTINE, MAJOR (RTCR)	513	656
REVISED TOTAL COLIFORM RULE	2D	STARTUP PROCEDURES TT (RTCR)	0	3

<b>Rule</b>	<b>Violation Type Code</b>	<b>Violation Name</b>	<b>Open Violations</b>	<b>Resolved Violations</b>
SURFACE WATER TREATMENT RULES	41	FAILURE MAINTAIN MICROBIAL TREAT.(LT2)	101	2
SURFACE WATER TREATMENT RULES	42	FAILURE TO FILTER (SWTR)	1	0
SURFACE WATER TREATMENT RULES	CT	LOW CT GREATER THAN 4 HOURS	5	12
SURFACE WATER TREATMENT RULES	38	MONITORING, ROUTINE (IESWTR/LT1), MAJOR	124	37
SURFACE WATER TREATMENT RULES	44	MONTHLY COMB FLTR EFFLUENT (IESWTR/LT1)	3	21
SURFACE WATER TREATMENT RULES	43	SINGLE COMB FLTR EFFLUENT (IESWTR/LT1)	4	10
SYNTHETIC ORGANIC COMPOUNDS M/R	03	MONITORING, ROUTINE MAJOR	234	8
VOLATILE ORGANIC COMPOUNDS M/R	03	MONITORING, ROUTINE MAJOR	101	8
VOLATILE ORGANIC COMPOUNDS MCL	02	MCL, AVERAGE	11	0

## Obtaining a Copy of the 2022 Public Drinking Water Annual Compliance Report

As required by the Safe Drinking Water Act, the State of Texas has made the 2022 *Public Drinking Water Annual Compliance Report* available to the public. Interested parties can obtain a copy of the 2022 *Annual Public Water Systems Compliance Report* for Texas by accessing the TCEQ website at <http://www.tceq.texas.gov>

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